Calendar No. 78

101ST CONGRESS *1st Session*	SENATE	REPORT 101-40

NATIONAL GLOBAL CHANGE RESEARCH ACT OF 1989

Mr. HOLLINGS, from the Committee on Commerce, Science, and Transportation, submitted the following

REPORT

OF THE

SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ON

S. 169

MAY 31 (legislative day, JANUARY 3), 1989.—Ordered to be printed

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MAY 31 (legislative day, JANUARY 3), 1989.—Ordered to be printed

Mr. HOLLINGS, from the Committee on Commerce, Science, and Transportation, submitted the following

REPORT

[To accompany S. 169]

The Committee on Commerce, Science, and Transportation, to which was referred the bill (S. 169) to amend the National Science and Technology Policy, Organization, and Priorities Act of 1976 in order to provide for improved coordination of national scientific research efforts and to provide for a national plan to improve scientific understanding of the Earth system and the effect of changes in that system on climate and human well-being, having considered the same, reports favorably thereon with an amendment in the nature of a substitute and recommends that the bill do pass.

PURPOSE OF THE BILL

The purpose of S. 169 is to provide the information needed to achieve effective policies for addressing changes in the global climate and environment. The bill establishes a framework for coordinating Federal agency research on greenhouse warming, ozone layer depletion, and other aspects of global change. It also mandates development and implementation of a 10-year, interagency global change research plan. Finally, the bill contains measures to coordinate, develop, and help implement initiatives regarding safe substitutes and new technologies for replacing ozone-depleting chemicals.

BACKGROUND AND NEEDS

In recent months, world attention has focused increasingly on changes in the Earth's climate and environment. Average global temperatures in the past decade have been the warmest on record.

Droughts have devastated parts of India, Africa, and North America, and at the same time, heavy rainfall has occurred in traditionally arid regions of South America. Floods have threatened thousands in Bangladesh, and the Sahara Desert is continuing its slow spread over northern Africa. The atmosphere's protective ozone layer is thinning perceptibly, and each spring, ozone concentrations over Antarctica drop dramatically. The extinction of plant and animal species continues, at a rate of about 10,000 species lost each year. Some of these environmental and climatic trends are a result of natural changes, but increasing evidence indicates that human activity is exerting a growing influence on the Earth system.

PROTECTING THE OZONE LAYER

In some cases, existing scientific understanding of the trends is adequate to support policy decisions. For example, scientists have known for more than a decade that chlorofluorocarbons (CFCs) could cause depletion of the stratospheric ozone layer which shields the Earth from harmful radiation. Based on research findings, the United States banned the non-essential use of CFCs as propellants in aerosol spray cans in 1976. However, the chemicals have continued to be used in air-conditioning and refrigeration systems, in the manufacture of plastics and foam, and as a cleaning solvent in the electronics industry.

The 1985 discovery of the Antarctic "ozone hole", a sudden drop in atmospheric ozone concentrations over Antarctica in the spring, revived arguments for stronger limitations on the manufacture of CFCs. In 1988, the United States completed ratification of the Montreal Protocol on Substances that Deplete the Ozone Layer. The Protocol requires that, beginning in mid-1989, developed countries freeze their CFC production and consumption at 1986 levels and cut production by 50 percent over the next 10 years. Production of halons, another family of ozone-depleting compounds which are used in fire extinguishers, is frozen at 1986 levels.

Since the negotiation of the Protocol, calls for larger and faster cuts in CFC production have been spurred by new scientific assessments indicating that world-wide ozone depletion is occurring two to three times faster than previously recognized. Atmospheric concentrations of some CFCs have been growing at 5 to 10 percent annually and levels of chlorine in the upper atmosphere have increased by a factor of four above natural levels. Even if all further emissions were stopped now, CFCs would continue to accumulate in the atmosphere because the chemicals are long-lived and may continue to destroy ozone for decades to centuries. As the gravity of the problem has become clear, leaders around the world have called for measures to substantially reduce and eventually eliminate the production of CFCs and other ozone-depleting chemicals.

Effective policies for achieving substantial CFC reductions are likely to require a combination of management strategies, substitutes, and alternative technologies. Perhaps the most rapid reduction in the release of CFCs could be achieved through source reductions. The elimination of CFCs as aerosol propellants by the United States, Canada, and Scandinavia a decade ago reduced global CFC emissions by about one-quarter. Identification of other non-essen-

tial uses should be possible. In addition, conservation and new methods for recovering used CFCs offer management strategies for significantly reducing emissions.

The producers and users of CFCs have expressed strong concerns about the rate at which CFCs can be phased out. They argue that it will take at least 10 years to develop alternatives to CFCs, test their toxicity, build new production capacity, and adapt existing air-conditioning and refrigeration equipment to the new alternatives. Both industry and evironmental groups have stressed the need to evaluate the environmental cost of substitutes and ensure that their use does not contribute substantially to other problems such as global warming.

Dupont and other companies have announced new compounds which can replace CFCs in some applications. Many of these new products consist of hydrofluorocarbons or mixtures of two or three liquids, sometimes including a small percentage of CFCs. Some industries, most notably the plastic and foam-blowing industries, have already taken steps to phase-out the use of CFCs. This will be more difficult in the refrigeration and air-conditioning sector.

Several million dollars are spent annually by the National Institute of Standards and Technology (NIST, formerly the National Bureau of Standards), the Department of Energy (DOE), and the Environmental Protection Agency (EPA) for research and development on CFC alternatives and the refrigeration and air-conditioning equipment which uses them. However, in some cases, the industry has indicated that they are not aware of, and are not consulted on, this research work. Industry representatives have recommended that government research be better coordinated and prioritized in order to ensure the best use of research funds and the fastest transition to alternatives.

UNDERSTANDING GLOBAL CHANGE

While researchers have made substantial progress in understanding the ozone issue, major scientific uncertainties exist regarding other aspects of global change. Much of the present concern is centered on the "greenhouse effect," the warming of the Earth's surface by solar energy that is trapped by gases in our atmosphere. The greenhouse effect is a natural phenomenon resulting from water vapor and carbon dioxide which normally are present in the atmosphere. Without this natural greenhouse warming, the Earth would be about 60 degrees Farenheit colder than it is, and life as we know it would not be possible. However, over the past century, the concentration of manmade greenhouse gases in the atmosphere has jumped sharply as we have burned fossil fuels, destroyed forested areas, and increased industrial activities. The accumulation of greenhouse gases is expected to increase the heat trapped by the Earth's atmosphere, and world temperatures could increase by several degrees. About half of the projected greenhouse warming is due to carbon dioxide. Methane, nitrous oxide, ground-level ozone, and CFCs together account for the other half.

While the greenhouse effect is a widely accepted scientific theory, predicting its exact consequences is a subject of intense debate. Steady increases in global temperatures could cause cli-

mate patterns to shift and create drought and dust bowl conditions in many areas of the world. Warming of the oceans could lead to rising sea levels which would permanently flood many coastal communities. Determining when and how such impacts may be felt will require an accurate understanding of how the planet works, including natural climate variations. Researchers are beginning to study the Earth as a complex, interdependent system, in which oceans, atmosphere, and life all affect one another and all help shape the face of the planet.

The Earth system approach to understanding global change will require collaboration among researchers from diverse fields of study. In addition, a high degree of international scientific cooperation will be necessary to collect the global observations needed. Research will involve the use of the most recent technology, including satellites, supercomputers, and highly advanced sensing instruments. Data management systems must be in place to process and distribute the information collected.

Scientists, both in the United States and worldwide, have initiated planning for a comprehensive research program to improve our understanding of global change. Internationally, attention has focused on the International Geosphere-Biosphere Program (IGBP). Developed by the International Council of Scientific Unions, this long-term program is designed to begin in the early 1990s. Its specific purpose will be "to describe and understand the interactive physical, chemical, and biological processes that regulate the total Earth system, the unique environment that it provides for life, the changes that are occurring in this system, and the manner in which they are influenced by human actions." The IGBP will attempt to provide the fundamental knowledge needed to permit an assessment of likely changes on the Earth over the next 100 years. It also will provide much needed coordination of world research efforts.

In the United States, several groups are involved in developing a long-range national research agenda, including the Office of Science and Technology Policy (OSTP), the National Research Council, and the Earth System Sciences Committee (ESSC) of the National Aeronautics and Space Administration (NASA) Advisory Council. The National Research Council, the operating arm of the National Academy of Sciences, has produced several reports on global change and is developing a comprehensive research proposal outlining the U.S. role in IGBP. Reports from both the OSTP and the ESSC include a review of Federal agency programs and make recommendations to define and coordinate their missions with respect to Earth systems research. These reports suggest building on existing programs of the three major research agencies which the Committee oversees—NASA, the National Oceanic and Atmospheric Administration (NOAA), and, with the Labor Committee, the National Science Foundation (NSF). The Committee concurs with the ESSC recommendations and intends to ensure that the roles of these three agencies in a national global change research program are integrated with other agency missions and programs.

NSF currently is charged with maintaining the health of basic research in all of the Earth science disciplines, primarily by supporting university-based research. In addition, NSF has become an

active sponsor and coordinator for many national and international multi-disciplinary global change research programs. Through such activities as its Global Geosciences Program, NSF is planning and currently implementing coordinated interagency field sampling programs which will provide a ground-based complement to the Earth-observing satellite missions planned for the 1990's.

NASA's primary responsibility is for Earth science research missions from space, which requires mission planning, satellite instrument development, and a supporting program of basic research. NASA will continue to support enhanced research and analysis programs and expand recently initiated interdisciplinary research programs. NASA will also coordinate proposed international satellite observational programs and complete approved satellite missions including the Sea-viewing Wide-Field-of-View Sensor (SEAWIFS), the Upper Atmospheric Research Satellite, the Ocean Topography Experiment (TOPEX/POSEIDON), and the International Solar Terrestrial Physics Program. The Committee will continue to evaluate NASA's principal contribution to the Mission to Planet Earth and related national research programs—the Earth Observing System that will be flown on the space station polar platform.

NOAA is the scientific agency with operational and research responsibilities for monitoring and short-term prediction of the oceans and atmosphere. As such, NOAA must maintain a long-term commitment for operational space observations and ground-based measurements; measurement system integrity; processing, analysis, archiving, and quality control of global data sets; oceanic and atmospheric research; research facilities; and improvement and validation of climate models. This year, NOAA initiated a program in Climate and Global Change that includes long-term observations, development of predictive models, supporting research, and information management. An essential component in any larger effort to address global change, NOAA's role in the national research program should continue to grow. The Committee is particularly supportive of recent recommendations by the NOAA Panel on Climate and Global Change that NOAA assume responsibility for obtaining and, in collaboration with the scientific community, synthesizing authoritative information on changes in the global environment in a form useful to decisionmakers.

One of the most serious challenges to a comprehensive global change research program is the development of effective mechanisms for coordinating it. Coordination is needed not only to eliminate unnecessary duplication of effort and ensure that research gaps are filled but also to establish and operate large research projects and experiments which draw on many groups. For example, the recently-completed research expedition to study ozone depletion in the Arctic involved the following: environmental data from the satellites, airplanes, and balloon-sondes of NOAA, NASA, Denmark, Norway, and the Soviet Union; focused research projects by scientists from NOAA, NASA, NSF-funded universities, private industry, and several European countries; and facilities and equipment provided by NASA and the Norwegian Air Force.

In recent years, the Federal Government has spent tens of millions of dollars collecting information and carrying out research

which could contribute to our understanding of global change. Because of the breadth of the problem and its widespread effects on our society, a number of different Federal agencies are involved. To coordinate these efforts, the Committee on Earth Sciences (CES) was formed in April 1987, under the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET). FCCSET was established by the National Science, Engineering, and Technology Policy and Priorities Act of 1976 (Science Act). It is chaired by the President's Science Advisor and consists of representatives from those Federal departments and agencies engaged in scientific research.

The purpose of CES is to increase the overall effectiveness and productivity of Federal research and development efforts directed toward understanding the Earth as a global system. In pursuing that objective, CES has endeavored to improve coordination among the global change research progams of existing Federal agencies and works closely with the National Research Council. Federal organizations which are represented on CES include NSF, NASA, OSTP, the Office of Management and Budget (OMB), EPA, the Council on Environmental Quality, and the Department of Agriculture, Commerce, Energy, the Interior, State, and Transportation.

In the past year, the CES has made steady progress towards establishing interagency cooperation and defining a Federal program on global change. Earlier this year, the CES achieved their first major milestone, a report which accompanied the submission of President Reagan's fiscal year 1990 budget proposal. Entitled "Our Changing Planet: A U.S. Strategy for Global Change Research," the report outlines a preliminary research strategy and provides the first clear summary by agency and by budget function of Federal global change research. The programs of seven agencies and departments are described.

While Federal investments in direct research on global change have been modest in recent years, total funding for related activities in areas such as atmospheric research, climate forecasting, and satellite development exceeds $1 billion annually. These "contributing activities" provide essential information and support services to programs of focused research on global change. The CES report indicates that in FY 1989, funding for focused global change research activities totals $133.9 million. The President's FY 1990 budget proposes a funding level of $190.5 billion.

As the challenges of global change become better defined, Federal spending on associated research is expected to grow. With increases in the size and number of programs, planning and coordination will be vital for allocating funds and preventing duplication of agency efforts. S. 169 would enhance the formulation of this comprehensive research program and preclude confusion.

In addition, the ongoing interagency research effort would be strengthened by establishing a formal statutory global change research planning process. This planning process would create a stable framework for the long-term research that is needed to help answer difficult scientific questions about global change and to provide government officials and citizens with the information that they will need to make informed policy choices.

LEGISLATIVE HISTORY

Senator Hollings introduced S. 169 on January 25, 1989. The bill is cosponsored by Senators Kerry, Gore, Danforth, Inouye, Bumpers, Riegle, Pressler, Wilson, McCain, Cranston, Bentsen, Bryan, Wirth, Kassebaum, Stevens, Sanford, Gorton, Cochran, Kasten, Packwood, Exon, Robb, Heflin, and Rudman. S. 169, as introduced, is very similar to S. 2614, legislation reported favorable by the Committee during the 100th Congress. That legislation resulted from testimony provided at hearings in 1987 and 1988 on global change research needs.

In the 101st Congress, the Committee has completed a number of hearings on the issue of global change. The first was held on February 22, 1989, by the full Committee to discuss S. 169, assess current scientific understanding of the greenhouse effect, and examine potential national impacts of global change. Witnesses provided testimony from Administration, coastal, agricultural and business perspectives, and were unanimous in their support for S. 169. The Administration did, however, recommend several revisions—most notably, that the section outlining agency research responsibilities be expanded and revised to reflect role statements developed by CES. These recommendations, as well as separate comments provided by the Departments of Commerce, the Interior, and State, were considered in revising the text of S. 169.

On February 23, a hearing was held by the Subcommittee on Science, Technology, and Space to examine the depletion of the stratospheric ozone layer by CFCs and other man-made chemicals. Witnesses discussed the implications of recent research, progress made in finding replacements for CFCs, and the problems which remain.

Two additional hearings focused on Federal global change research programs and on identifying major research needs. On March 8, a hearing was held by the full Committee to consider NASA's proposed Mission to Planet Earth. Witnesses at the hearing discussed the need for a global monitoring system, integrating remotely-sensed observations from satellites and ground-based measurements through a comprehensive information management system. The hearing highlighted the importance of NASA activities to development of a national research effort. On April 11, the full Committee and the National Ocean Policy Study held a hearing to examine the role of the oceans in global climate change. Witnesses called for a "rededication" of NOAA as an essential component in any larger national program to address global change.

On April 18, 1989, in open executive session, the Committee considered an amendment in the nature of a substitute incorporating most of the changes suggested by the Administration. In addition, Senator McCain offered an amendment to the substitute that added a new title to the Science Act and would encourage development of safe substitutes and alternate technologies to replace ozone-depleting chemicals. Senator McCain's amendment was based on the provisions of S. 644, which he introduced shortly after the February 23, hearing on ozone depletion. Both the Committee substitute and the McCain amendment were agreed to by voice vote. The Committee then ordered the bill reported favorably, as amended, without objection.

Summary of Major Provisions

As reported, S. 169 would:

1. Amend the Science Act to provide for the development and implementation of long-term interagency research plans under the authority of FCCSET.

2. Require FCCSET to develop and oversee the implementation of a 10-year national global change research plan. In carrying out that responsibility, FCCSET would:

   a. establish national goals and priorities for global change research, working with the National Research Council and other research groups;

   b. define the roles of each agency and department in implementing the plan by building on their existing missions and responsibilities;

   c. review each agency budget estimate in the context of national goals, using budget information provided by the agencies and OMB; and

   d. submit an annual report to Congress, regarding progress in implementing the national research plan.

3. Establish a separate FCCSET working group on ozone depletion to coordinate, develop, and implement initiatives on alternatives to the use of ozone-depleting chemicals. The working group would:

   a. study and recommend ways to facilitate recycling, conservation, and the use of substitutes;

   b. identify laws and regulations that impede efforts to reduce the use of ozone-depleting chemicals;

   c. examine how the Federal Government can reduce its own use of such chemicals;

   d. recommend Federal research programs and other activities that could help industry develop and use CFC alternatives; and

   e. report to the President and the Congress not later than one year after date of enactment.

Estimated Costs

In accordance with paragraph 11(a) of rule XXVI of the Standing Rules of the Senate and section 403 of the Congressional Budget Act of 1974, the Committee provides the following cost estimate, prepared by the Congressional Budget Office:

U.S. Congress,
Congressional Budget Office,
Washington, DC, April 28, 1989.

Hon. Ernest F. Hollings,
Chairman, Committee on Commerce, Science, and Transportation, U.S. Senate, Washington, DC.

Dear Mr. Chairman: The Congressional Budget Office has reviewed S. 169, the National Global Change Research Act of 1989, as ordered reported by the Senate Committee on Commerce, Science, and Transportation, April 18, 1989.

Based on information provided by the National Science Foundation, the U.S. Geological Survey, and the National Oceanic and At-

mospheric Administration, CBO estimates that enacting S. 169 would result in no significant costs to the federal government. The bill would require the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET) to prepare a 10-year National Global Change Research Plan. The plan would establish federal priorities for global change research and define the roles of the federal agencies conducting global change research. The bill would also require FCCSET to establish a working group to study alternatives to ozone depleting chemicals. CBO expects that these requirements would not significantly affect federal spending, because they are similar to ongoing activities at FCCSET and the participating agencies.

No costs would be incurred by state or local governments as a result of enactment of this bill.

If you wish further details on this estimate, we will be pleased to provide them. The CBO staff contact is Michael Sieverts, who can be reached at 226-2860.

Sincerely,

ROBERT D. REISCHAUER,
Director.

REGULATORY IMPACT STATEMENT

In accordance with paragraph 11(b) of rule XXVI of the Standing Rules of the Senate, the Committee provides the following evaluation of the regulatory impact of the legislation, as reported.

NUMBER OF PERSONS COVERED

This legislation improves coordination among Federal agencies and mandates a 10-year, national global change research plan. It does not require new regulations. However, it does call for an evaluation of existing regulations to ensure that they do not impede efforts to reduce the use of ozone-depleting chemicals.

ECONOMIC IMPACT

This legislation authorizes no new Federal spending. By providing for better interagency coordination and cooperation, it should improve the effectiveness of research funds now spent on global change research and on developing safe substitutes and alternative technologies for CFCs and halons. The mandated interagency research plan should prevent unnecessary duplication of effort and promote the sharing of research data between agencies.

PRIVACY

This legislation will not have any adverse impact on the personal privacy of the individuals involved.

PAPERWORK

This legislation requires a 10-year research plan which is to be revised at least once every 3 years. It also requires that FCCSET prepare and submit reports to Congress on implementation of this act.

SECTION-BY-SECTION ANALYSIS

SECTION 1.—SHORT TITLE

This section provides the short title, the "National Global Change Research Act of 1989".

SECTION 2

This section, and those which follow, would amend the Science Act. Section 2 of the bill would amend section 102(a) of the Science Act, which identifies the principles forming the basis for national science and technology policy. The list of principles would be expanded to emphasize the need for comprehensive long-term planning of research to address complex scientific issues of national and international concern. The purpose of such planning would be to ensure a scientific basis for policy decisions.

SECTION 3

This section would amend section 401 of the Science Act, which defines the responsibilities of FCCSET. FCCSET was initially established in 1976 pursuant to the existing language in section 401. However, as a result of Reorganization Plan No. 1 of 1977, FCCSET was abolished, its functions were transferred to the President, and it then was reestablished by executive order under the same name. This section of the bill as reported restates the responsibilities of FCCSET under the Science Act and makes it clear that those responsibilities apply to FCCSET as reestablished under the 1977 reorganization.

As the Government's interagency committee for science, FCCSET is currently charged with addressing scientific issues which affect more than one agency and with developing recommendations for resolving those issues. Section 3 of the bill as reported also would provide FCCSET with new authority to develop and coordinate plans for interagency research. Such plans would identify critical research needs, and provide for cooperation among government, industry, and academic scientists in the United States and overseas. Finally, this section would add the development of interagency plans to the purposes for which FCCSET committees and working groups may be formed.

SECTION 4

This section would add a new title VI at the end of the Science Act, mandating development of a comprehensive 10-year plan for Federal global change research.

New section 601 outlines the findings and purpose of title VI. The findings recognize that human activities could result in worldwide changes in the global environment, including ozone layer depletion, sea level rise, and global climate shifts. The findings also outline possible serious and adverse impacts of such changes and emphasize the importance of improved scientific understanding in developing effective policies to deal with global change. Finally, this new section notes recent scientific advancements, ongoing efforts to develop a national program, and the leadership of the United States in global change research. The purpose of title VI is

to ensure that needed research efforts are ongoing to assist the United States and the world in understanding and coping with global change.

New section 602 instructs the President, through FCCSET, to develop a 10-year National Global Change Research Plan. The plan would be delivered to Congress within one year and revised at least once every three years. The plan would establish goals and priorities for a Federal research program, define roles for each agency in meeting those goals, and recommend funding levels for Federal activities necessary to implement the plan. The relevant programs of the 10 listed Federal agencies and departments would be considered in developing the plan, as well as any others deemed appropriate.

Subsection (b) of new section 602 details FCCSET's responsibilities regarding global change research activities. FCCSET would serve as the lead entity responsible for overseeing implementation of the 10-year plan and would coordinate research efforts by Federal agencies. FCCSET also would review agency budget estimates for global change research, and provide the results of that review to OMB. Finally, FCCSET would work with scientists outside the Federal Government and cooperate with the State Department in coordinating Federal interagency participation in international research and assessment activities.

New section 602(c) identifies research elements to be considered in the national plan, including worldwide monitoring systems, methods for detecting global change, studies of past global change, predictive models, and information management.

Subsection (d) of this section describes the existing missions of nine agencies from which the national research program will develop. By summarizing the agencies' existing roles, the Committee intends to ensure that existing agency programs are incorporated into the national global change program. The inclusion of current research roles is not intended to limit agency responsibilities or to otherwise interfere with the flexibility which will be required by FCCSET to develop and implement a comprehensive national research program. The Committee expects agency responsibilities to evolve over time, as the challenges associated with global change become better defined.

As suggested by the ESSC, the existing activities of NSF, NASA, and NOAA form a core around which a national program would be built. NSF would maintain basic research programs in all areas of the physical and biological sciences. NASA would have primary responsibility for observing and studying the Earth from space. NOAA would be responsible for monitoring the oceans and atmosphere and for predictive modeling.

In addition, the existing missions of several other Federal agencies and departments would provide specific and essential contributions to a national global change research program. Within the Department of the Interior, the United States Geological Survey would continue efforts to improve understanding of hydrologic and geological processes and resources, including mapping, past Earth changes, and polar and arid region processes. EPA would maintain programs for assessing the environmental and human-health consequences of global change. DOE would continue research on carbon

dioxide and other energy production-related emissions, including research to quanity the relationships between carbon dioxide and other trace gases and temperature rise. In the context of developing a comprehensive national energy policy, DOE would also be responsible for evaluating climate responses to various energy options. The Department of Agriculture would build upon existing programs for assessing the effects of climate and environmental change on agricultural production systems and on forest ecosystems. The Department of Transportation would be responsible for evaluating the relationship between global change and transportation systems. Finally, the Department of Defense would strengthen efforts to facilitate the exchange of relevant information with civilian agencies.

The research plan would provide for interagency collaboration to develop information systems and models needed to study the Earth system. At present, an enormous amount of weather and environmental information which could be used to study global environmental change is collected by satellites and by ground monitoring systems. In the future, this flow of data is expected to increase dramatically. OSTP estimates that over the next decade, the amount of data from satellites alone will increase from 100 billion bits per day to over 10 trillion bits per day. The Committee recognizes that data management and archiving systems must be in place to process, distribute, and store this information, if it is to be available to researchers.

New section 602(e) recognizes the importance of the State Department in improving international understanding of global environmental change. While the State Department is not directly involved in the conduct of research, it will play a critical role in establishing comprehensive worldwide monitoring and research programs. This section would require the State Department and FCCSET to work together in providing representation at international scientific meetings and in coordinating U.S. research efforts with those of other nations.

Finally, new section 602(f) would direct each Federal agency and department involved in global change research to submit, with its annual budget request to OMB, a report indicating which parts of its budget are required to implement the National Global Change Research Plan. OMB would then review each budget request and take into account an agency's contribution to global change research.

New section 603 would define the relation of the National Global Change Research Act to two existing laws, the National Climate Program Act and the Global Climate Protection Act of 1987. With respect to the first, Federal officials are directed to ensure that relevant research activities of the National Climate Program are considered in developing national global change research efforts. With respect to the second, FCCSET and the agencies represented on FCCSET would provide their research findings to EPA for use in formulating a coordinated national policy on responding to global climate change. In addition, research findings would be made available to other agencies and departments to help them modify policies to meet their statutory obligations.

New section 604 would require FCCSET to submit to the President and Congress an annual report describing global change research activities during the preceding fiscal year. The report would summarize the research plan, any changes made to it, and agency budgets for global change activities. The report would also include recommendations for additional legislation or action needed to improve effectiveness of national global change research efforts.

SECTION 5

This section would add a new title VII at the end of the Science Act, mandating establishment of an ozone depletion working group.

New section 701 outlines the findings and purpose of title VII. The findings recognize the role of CFC and halon emissions in the depletion of the stratospheric ozone layer and the need for action to reduce the use of such ozone-destroying chemicals. The findings also outline steps which should be taken by the Federal Government, such as evaluating government regulations and procurement practices with respect to CFCs and halons, assisting industry to develop and use safe substitutes and alternative technologies, and encouraging recycling and conservation of CFCs and halons.

New section 702 instructs the President through FCCSET to establish a working group to coordinate and develop initiatives for replacing CFCs and halons, and to determine a plan of action for reducing CFC and halon emissions. The working group would be required to carry out a study to: (1) determine whether any existing government regulations are impeding efforts to reduce CFC and halon use; (2) recommend research priorities and other initiatives for identifying and implementing alternatives to the use of such chemicals; (3) identify steps to promote recycling, conservation, and proper handling of CFCs and halons; (4) specify measures to reduce Federal procurement of ozone-depleting chemicals; and (5) develop initiatives to transfer information and technology regarding safe substitutes to other nations, especially developing countries. Membership on the working group would include NIST, NOAA, NSF, NASA, EPA, the General Services Administration, the Office of the U.S. Trade Representative, and the Departments of Energy, Agriculture, the Interior, Defense, and State. The working group would report to the President and the Committee within one year regarding their findings and recommendations.

New section 703 authorizes the Director of the OSTP, who is also the Chairman of FCCSET, to establish a six-member industry advisory board. The purpose of the advisory board would be to assist the working group in carrying out the study outlined in new section 702. Representation of both manufacturers and users of CFCs and halons would be required on the board.

New section 704 defines the terms, "chlorofluorocarbon", "halon", and "Montreal Protocol".

CHANGES IN EXISTING LAW

In compliance with paragraph 12 of rule XXVI of the Standing Rules of the Senate, changes in existing law made by the bill, as reported, are shown as follows (existing law proposed to be omitted

is enclosed in black brackets, new material is printed in italic, existing law in which no change is proposed is shown in roman):

NATIONAL SCIENCE AND TECHNOLOGY POLICY, ORGANIZATION, AND PRIORITIES ACT OF 1976

Section 102 of that Act

DECLARATION OF POLICY

SEC. 102. (a) PRINCIPLES.—In view of the foregoing, the Congress declares that the United States shall adhere to a national policy for science and technology which includes the following principles:

(1) through (5) * * *

[(6) The recognition that, as changing circumstances require periodic revision and adaptation of title I of this Act, the Federal Government is responsible for identifying and interpreting the changes in those circumstances as they occur, and for effecting subsequent changes in title I as appropriate.]

(6) The development and implementation of long-range, interagency research plans to support policy decisions regarding identified national and international concerns, and for which a sustained and coordinated commitment to improving scientific understanding will be required.

(b) through (c) * * *

Section 207 of that Act

ADDITIONAL FUNCTIONS OF THE DIRECTOR: ADMINISTRATIVE PROVISIONS

SEC. 207. (a) The Director shall, in addition to the other duties and functions set forth in this title—

(1) serve as Chairman of the Federal Coordinating Council for Science, Engineering, and Technology [established under title IV]; and

(2) serve as a member of the Domestic Council—

(b) through (c) * * *

Section 401 of that Act

[ESTABLISHMENT AND FUNCTIONS

[SEC. 401. (a) There is established the Federal Coordinating Council for Science, Engineering, and Technology (hereinafter referred to as the "Council").

[(b) The council shall be composed of the Director of the Office of Science and Technology Policy and one representative of each of the following Federal agencies: Department of Agriculture, Department of Commerce, Department of Defense, Department of Health, Education, and Welfare, Department of Housing and Urban Development, Department of the Interior, Department of State, Department of Transportation, Veterans' Administration, National Aeronautics and Space Administration, National Science Foundation, Environmental Protection Agency, and Energy Research and Development Administration. Each such representative shall be an official of policy rank designate by the head of the Federal agency concerned.

[(c) The Director of the Office of Science and Technology Policy shall serve as Chairman of the Council. The Chairman may designate another member of the Council to act temporarily in the Chairman's absence as Chairman.

[(d) The Chairman may (1) request the head of any Federal agency not named in subsection (b) of this section to designate a representative to participate in meetings or parts of meetings of the Council concerned with matters of substantial interest to such agency, and (2) invite other persons to attend meetings of the Council.

[(e)The Council shall consider problems and developments in the fields of science, engineering, and technology and related activites affecting more than one Federal agency, and shall recommend policies and other measures designed to—

[(1) provide more effective planning and administration of Federal scientific engineering, and technological programs,

[(2) identify research needs including areas requiring additional emphasis,

[(3) achieve more effective utilization of the scientific, engineering, and technological resources and facilities of Federal agencies, including the elimination of unwarranted duplication, and

[(4) further international cooperation in science, engineering, and technology.

[(f) The Council shall perform such other related advisory duties as shall be assigned by the President or by the Chairman.

[(g) For the purpose of carrying out the provisions of this section, each Federal agency represented on the Council shall furnish necessary assistance to the Council. Such assistance may include—

[(1) detailing employees to the Council to perform such functions, consistent with the purposes of this section, as the Chairman may assigned to them, and

[(2) undertaking, upon request of the Chairman, such special studies for the Council as come within the functions herein assigned.

[(h) For the purpose of conducting studies and making reports as directed by the Chairman, standing subcommittees and panels of the Council may be established. Among such standing subcommittees and panels of the Council shall be the Subcommittee on Food, Agriculture, and Forestry Research. This subcommittee shall review Federal research and development programs relevant to domestic and world food and fiber production and distribution, promote planning and coordination of this research in the Federal Government, and recommend policies and other measures concerning the food and agricultural sciences for the consideration of the Council. The subcommittee shall include, but not be limited to, representatives of each of the following departments or agencies; the Department of Agriculture, the Department of State, the Department of Defense, the Department of the Interior, the Department of Health and Human Services, the National Oceanic and Atmospheric Administration, the Department of Energy, the National Science Foundation, the Environmental Protection Agency, and the Tennessee Valley Authority. The principal representatives of the De-

partment of Agriculture shall serve as the chairman of the subcommittee.]

FUNCTIONS OF COUNCIL

SEC. 401.(a) The Federal Coordinating Council for Science, Engineering, and Technology (hereinafter referred to as the 'Council') shall consider problems and developments in the fields of science, engineering, and technology and related activities affecting more than one Federal agency, and shall recommend policies and other measures designed to—

(1) provide more effective planning and administration of Federal scientific, engineering, and technological programs;

(2) identify research needs, including areas requiring additional emphasis;

(3) acheive more effective utilization of the scientific, engineering, and technological resources and facilities of Federal agencies, including the elimination of unwarranted duplication; and

(4) further international cooperation in science, engineering, and technology.

(b) The Council may be assigned responsibility for developing long-range and coordinated plans for scientific and technical research which involve the participation of more than two Federal agencies. Such plans shall—

(1) identify research approaches and priorities which most effectively advance scientific understanding and provide a basis for policy decisions;

(2) provide for effective cooperation and coordination of research among Federal agencies; and

(3) encourage domestic and, as appropriate, international cooperation among government, industry, and university scientists.

(c) The Council shall perform such other related advisory duties as shall be assigned by the President or by the Chairman of the Council.

(d) For the purpose of carrying out the provisions of this section, each Federal agency represented on the Council shall furnish necessary assistance to the Council. Such assistance may include—

(1) detailing employees to the Council to perform such functions, consistent with the purposes of this section, as the Chairman of the Council may assign to them; and

(2) undertaking, upon request of the Chairman, such special studies for the Council as come within the scope of authority of the Council.

(e) For the purpose of developing interagency plans, conducting studies, and making reports as directed by the Chairman, standing committees and working groups of the Council may be established.

New Titles VI and VII of that Act

FINDINGS AND PURPOSE

SEC. 601. (a) Congress finds and declares the following:

(1) Industrial, agricultural, and other human activities, coupled with an expanding world population, are contributing to processes of global change that may significantly alter our habitat within a few human generations.

(2) Such human-induced changes may lead to significant global warming and the depletion of stratospheric ozone, and thus have the potential to alter world climate patterns, increase global sea levels, and reduce the ability of the atmosphere to screen out harmful ultraviolet radiation. Over the next century, and consequences could seriously and adversely affect world agricultural and marine production, coastal habitability, regional economic well-being, human health, and biological diversity;

(3) Development of effective policies to mitigage and cope with human-induced global changes will rely on greatly improved scientific understanding of global environmental processes and on our ability to distinguish between the effects of human activities on one hand and the results of natural change on the other.

(4) New developments in interdisciplinary Earth sciences, global observing systems, and computing technology make possible significant advances in the scientific understanding and prediction of these global changes and their effects.

(5) Efforts are ongoing in several Federal agencies which could contribute to a well-defined and coordinated national program of research, monitoring, assessment, information management, and prediction.

(6) The United States, as a world leader in Earth system science, should continue to provide leadership in developing and implementing an international global change research program.

(b) It is the purpose of Congress in this title to provide for a national global change research plan which when implemented will assist the Nation and the world to understand, assess, predict, and respond to human-induced and natural processes of global change.

NATIONAL GLOBAL CHANGE RESEARCH PLAN

SEC. 602. (a)(1) The President, through the Council, shall develop a National Global Change Research Plan (hereafter in this title referred to as the 'Plan') in accordance with section 401(b) of this Act and the provisions, findings, and purpose of this title. Consistent with the responsibilities set forth under subsection (d) of this section, the Plan shall contain recommendations for a 10-year national research effort, to be submitted to Congress within one year after the date of enactment of this title and to be revised at least once every three years thereafter.

(2) The Plan shall—

(A) establish the goals and priorities for Federal global change research for the 10-year period beginning in the year the Plan (or revised Plan) is submitted;

(B) set forth the role of each Federal agency and department in implementing the Plan;

(C) describe specific activities, including research activities, data collection and analysis requirements, predictive modeling,

participation in international research efforts, and information management, required to achieve such goals and priorities; and

(D) consider and utilize, as appropriate, reports and studies conducted by Federal agencies and departments the National Research Council, or other entities.

(3) The Plan shall address, where appropriate, the relevant programs and activities of the following Federal agencies and departments:

(A) The Department of Commerce, particularly the National Oceanic and Atmospheric Administration;

(B) the National Science Foundation;

(C) the National Aeronautics and Space Administration;

(D) the Department of the Interior;

(E) the Department of Energy;

(F) the Department of Agriculture;

(G) the Environmental Protection Agency;

(H) the Department of Defense, particularly the Department of the Navy;

(I) the Department of Transportation;

(J) the Department of State; and

(K) such other research agencies and departments as the President, or the Chairman of the Council, considers appropriate.

(b) The Council shall—

(1) serve as lead entity responsible for oversight of the implementation of the Plan;

(2) coordinate the global change research activities of Federal agencies and departments and report at least annually to the President, through the Chairman of the Council, on any recommended changes in agency of departmental roles that are needed to better implement the Plan;

(3) prior to the President's submission to Congress of the annual budget estimate, review each agency budget estimate in the context of the Plan and make the results of that review available to each agency and to the appropriate elements of the Executive Office of the President, particularly the Office of Management and Budget;

(4) work with Federal agencies, with the National Research Council, and with academic, State, and other groups conducting research and assessments of global changes and their effects;

(5) cooperate with the Department of State in the coordination of Federal interagency participation in international activities related to global change research and assessment; and

(6) consult with actual and potential users of such research and assessments.

(c) The Plan shall provide for, but not be limited to, the following research elements:

(1) Global measurements, establishing worldwide observations necessary to understand the physical, chemical, and biological processes responsible for changes in the Earth system on all spatial and time scales.

(2) Documentation of global change, including the development of mechanisms for recording changes that will actually occur in the Earth system over the coming decades.

(3) Studies of earlier changes in the Earth system, using evidence from the geological and fossil record.

(4) Predictions, using quantitative models of the Earth system to identify and simulate global trends.

(5) Development of an information base, assembling the information essential for effective decision-making to respond to the consequences of global change.

(6) Focused research initiatives directed toward resolving scientific uncertainties regarding specific aspects of the Earth system.

(d)(1) The Plan shall take into consideration, but not be limited to, the following existing agency missions and responsibilities:

(A) The National Science Foundation shall be responsible for maintaining the health of basic research in all areas of Earth, atmospheric, and ocean science, including the relevant biological and social sciences and research in the polar regions. Such basic research may include ground-based studies on regional and global scales; large-scale field programs; interpretation and use of remotely sensed data and geographic information systems; theoretical and laboratory research; research facilities support; and development of numerical models, information and communication systems, and data bases.

(B) The National Aeronautics and Space Administration shall be responsible for Earth-science research missions from space, including those studies of broad scientific scope that study the planet as an integrated whole. Associated efforts may include related studies of physical, chemical, and biological processes; sub-orbital and ground-based studies; remote-sensing and advanced instrument development; improvement of techniques for the transmission, processing, archiving, retrieval, and use of data; related scientific models; and other research activities in atmospheric, oceanographic, and land science.

(C) The National Oceanic and Atmospheric Administration shall maintain a balanced program of observations, analysis and research, climate prediction, and information management. Responsibilities shall include operational in-situ and satellite observation and monitoring systems; related research on physical and biogeochemical processes in the climate system, including their effect on marine ecosystems and resources; development, testing, and application of models and diagnostic techniques for the detection and prediction of natural and human-induced climatic changes; and the acquisition, maintenance, and distribution of long-term data bases and related climate information.

(D) The Department of the Interior shall be responsible for the collection, maintenance, analysis, and interpretation of information on terrestrial, aquatic, biological, and other natural resources, including monitoring of hydrologic and geologic processes and resources, of land-use, of land-cover, and of biological habitats, resources, and diversity. Research areas may include past changes recorded in the physical, chemical and biological record; the hydrologic cycle; land-surface and solid-Earth processes that relate to environmental change; geography and cartography; ecosystem modeling and dynamics; and ethnology. Re-

search findings shall be used in assessing and responding to the effects of global change on aquatic, terrestrial, biological, and other natural resources.

(E) The Environmental Protection Agency shall conduct research to assess, evaluate, and predict the ecological, environmental, and human-health consequences of global change, including the interaction of plant and animal communities and ecosystems with the climate system. Additional areas of responsibility may include assessment, research, and development of techniques to mitigate and adapt to climate change, development of emission factors, inventories and models for radiatively important trace gases, and evaluation of the relationship between global atmospheric change and regional air and water quality.

(F) The Department of Energy shall be responsible for research on emissions of carbon dioxide and other gases from energy production and use, including the study of climatic responses to those emissions and the development of an information base for evaluating the effects of various energy and industrial policy options on climate. Associated efforts may include assessment and application of predictive models; evaluation of global and regional climate responses to various energy policy options; research on industrial sources of trace gases; and studies to assess how responses to climate change affect energy options.

(G) The Department of Agriculture shall be responsible for research to assess the effects of global change on the agricultural food and fiber production systems and on forests and forest ecosystems, including research on biological response mechanisms to increasing greenhouse gases, improvement of plant and animal germplasm to respond to global change, and development and implementation of plans for changing agricultural and foresty practices to ameliorate the observed increased of greenhouse gases. An additional responsibility shall include research on applications of agricultural climatology to improve management decisions and conservation of resources while maintaining quality and quantity of crop yields.

(H) The Department of Defense shall be responsible for research into environmental processes and conditions that affect defense operations, tactics, and systems. Additional responsibilities shall include facilitating exchange of relevant information with civilian agencies, participation in planning of national research efforts, and cooperative development of data management systems to ensure effective coordination and transfer of information among military and civilian agency programs.

(I) The Department of Transportation shall be responsible for evaluating the effects of transportation policy options on the global environment, particularly the use of fuels in transportation systems that result in the emission of combustion gases, including aircraft emission into the stratosphere. An additional responsibility shall be the assessment of the ways in which climate changes affect the efficiency and safety of transportation on land, sea, and rivers, and in air.

(2) The Plan shall reflect the need for collaboration among agencies with respect to—

(A) the establishment and development of an information system for Earth system science; and

(B) research into the development of new conceptual and numerical models of the Earth system.

(e) The Secretary of State shall consult with the Chairman of the Council in—

(1) providing representation at international governmental meetings and conferences on global change research and assessment in which the United States participates; and

(2) coordinating the Federal activities of the United States with the global change research and assessment programs of other nations and international agencies and organizations, including the World Meteorological Organization and the United Nations Environmental Program.

(f) Each Federal agency and department involved in global change research shall, as part of its annual request for appropriations to the Office of Management and Budget, submit a report identifying each element of its proposed global change activities, which—

(1) specifies whether each such element (A) contributes primarily to the implementation of the Plan or (B) contributes primarily to the achievement of other objectives but aids Plan implementation in important ways; and

(2) states the portion of its request for appropriations that is allocated to each such element. The Office of Management and Budget shall review each such report in light of the goals, priorities, and agency responsibilities set forth in the Plan, and shall include, in the President's annual budget estimate, a statement of the portion of each agency or department's annual budget estimate that is allocated to each element of such agency or department's global change activites. Annual budget estimates shall be submitted to Congress that reflect the activities outlined in the Plan. The Office of Management and Budget shall ensure that a copy of the President's annual budget estimate is transmitted to the Chairman of the Council at the same time as such budget estimate is submitted to Congress.

RELATION TO OTHER LAWS

SEC. 603. (a) The President, the Chairman of the Council, and the Secretary of Commerce shall ensure that relevant research activities of the National Climate Program, established by the National Climate Program Act (15 U.S.C. 2901 et seq.), are considered in developing national global change research efforts.

(b) The President, the Chairman of the Council, and the heads of the agencies represented on the Council shall ensure that the research findings of the Council and the Federal agencies and departments are available to—

(1) the Environmental Protection Agency for use in the formulation of a coordinated national policy on global climate change pursuant to section 1103 of the Global Climate Protection Act of 1987 (15 U.S.C. 2901, note); and

(2) all Federal agencies and departments for use in the formulation of coordinated national policies for responding to human-induced and natural processes of global change pursuant to other statutory responsibilities and obligations.

ANNUAL REPORT

SEC. 604. The Chairman of the Council shall prepare and submit to the President and Congress, not later than January 31 of each year, and annual report on the activities conducted pursuant to this title during the preceding fiscal year, including—

(1) a summary of the achievements of Federal global change research efforts during that preceding fiscal year;

(2) an analysis of the progress made toward achieving the goals and objectives of the Plan;

(3) a copy or summary of the Plan and any changes made in such Plan;

(4) a summary of agency budgets for global change activities for that preceding fiscal year; and

(5) any recommendations regarding additional action or legislation which may be required to assist in achieving the purposes of this title.

TITLE VIII—OZONE DEPLETION WORKING GROUP

FINDINGS AND PURPOSE

SEC. 701. (a) Congress finds and delcares the following:

(1) The ozone layer in the upper atmosphere is deteriorating as a result of chemical interactions with chlorofluorocarbons and halons emitted into the atmosphere in the course of human activity.

(2) The United States is a party to and is implementing the Montreal Protocol, which calls for a 50 percent reduction in 1986 worldwide production levels of chlorofluorocarbons by 1998 and a freeze at 1986 production levels of halons.

(3) The Ozone Trends Panel Report of the National Aeronautics and Space Administration presents new and disturbing information that should intensify efforts to develop safe alternatives to the existing chlorofluorocarbon and holon componds.

(4) Further reductions in the production and use of chlorofluorocarbons and halons are likely to be necessary in light of this new information.

(5) Chlorofluorocarbons and halons are pervasive industrial components and the United States should be commercially and industrially prepared for further reductions.

(6) The Federal Government is one of the largest purchasers of products containing chlorofluorocarbons and halons.

(7) The rapid development of and transition to safe substitutes for chlorofluorocarbons and halons and alternative technology are vital to the national and international interest.

(8) The Federal Government should—

(A) devise initiatives and assist industry to facilitate the development of safe substitutes for chlorofluorocarbons and halons and alternative technology;

(B) identify statutory and regulatory impediments to chlorofluorocarbon and halon reduction and recycling;

(C) cooperate with the private sector to identify opportunities for additional such recycling and conservation initiatives;

(D) identify governmental procurement and use of chlorofluorocarbons and halons; and

(E) undertake initiatives, including government-supported research, to assist industry in accomplishing the transition to safe substitutes and alternative technology as soon as practicable.

WORKING GROUP

SEC. 702. (a) The President, through the Council, shall establish a working group which, in accordance with title IV and the provisions, findings, and purposes of this title, shall—

(1) coordinate, develop, and help implement initiatives on research and other activities of Federal agencies and departments to facilitate the development of and transition to safe substitutes for chlorofluorocarbons and halons and alternative technology; and

(2) conduct a comprehensive study for the purpose of determining the steps which can be taken to reduce the emission of chlorofluorocarbons and halons.

(b) In carrying out the study required by subsection (a), the working group shall—

(1) determine whether any Federal, State, or local laws and regulations are impeding the reduction of chlorofluorocarbons and halons and the transition to safe substitutes and alternative technology;

(2) recommend Federal research programs and other activities to assist industry in identifying alternatives to the use of chlorofluorocarbons and halons as refrigerants, solvents, fire retardants, foam-blowing agents, and other commercial applications and in achieving a transition to those alternatives;

(3) identify steps to promote or assist in chlorofluorocarbon and halon recycling and conservation;

(4) examine Federal procurement practices with respect to chlorofluorocarbons and halons and recommend measures to promote the earlier possible transition by the Federal Government to the use of safe substitutes where they are available.

(5) specify initiatives, including appropriate intergovernmental, international, and commercial information and technology transfers, to promote the development and use of chlorofluorocarbons and halon substitutes, and alternative technology;

(6) identify steps and initiatives to foster proper handling processes and field practices involving chlorofluorocarbons and halons to reduce ozone-depleting emissions; and

(7) take other such steps as are necessary to fulfill the purpose of the working group as set forth in subsection (a).

(c) The working group shall address, where appropriate, the relevant programs and activities of, and shall include representatives from, the following Federal agencies and departments:

(1) the Department of Commerce, particularly the National Oceanic and Atmospheric Administration and the National Institute for Standards and Technology;

(2) the National Science Foundation;

(3) the National Aeronautics and Space Administration;

(4) the Environmental Protection Agency;

(5) the Department of Energy;

(6) the Department of Agriculture;

(7) the Department of the Interior;

(8) the Department of Defense;

(9) the Department of State; and

(10) such other agencies and departments as the President, or the Chairman of the Council, considers appropriate, including the General Services Administration and the Office of the United States Trade Representative.

(d)(1) The President, or the Chairman of the Council shall designate one of the members of the working group to serve as chairman.

(2) The President shall call the first meeting of the working group prior to the expiration of the 120-day period following the date of enactment of this title.

(e) The Council shall, not later than 12 months after the date of enactment of this title, report the results of the study required by subsection (a) to the President and to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science, Space, and Technology of the House of Representatives. Such report shall include the findings of the working group and its recommendations for such statutory and regulatory changes, research programs, and other initiatives as the working group determines necessary in order to assist in the effort to reduce the use of chlorofluorocarbons and halons in the United States, to assure a smooth transition to the use of safe substitutes, and to meet the purpose of this title.

ADVISORY BOARD

SEC. 703. The Director shall establish an advisory board to assist the Council and the working group established under section 702 in carrying out the purposes of this title.

(b) The advisory board shall consist of at least six members, two of whom shall be industry representatives from chlorofluorocarbon and halon manufacturers and four of whom shall be industry representatives from chlorofluorocarbon and halon users.

(c) Members of the advisory board shall serve without compensation in addition to compensation they may otherwise be entitled to receive, but shall be reimbursed for travel, subsistance, and other such expenses incurred in the actual performance of duties vested in the advisory board.

(d) The advisory board shall be established not later than three months following the date of enactment of this title and shall continue to exist as long as the working group established under section 702 is in existence.

DEFINITIONS

SEC. 704. For purpose of this title—

(1) the term "chlorofluorocarbon" means any controlled substance listed in Group I of Annex A of the Montreal Protocol;

(2) the term "halon" means any controlled substance listed in Group II of such Annex A of the Montreal Protocol; and

(3) the term "Montreal Protocol" means the Montreal Protocol on Substances that Deplete the Ozone Layer, done at Montreal on September 16, 1987.

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